2021 PCI DESIGN AWARDS

GOVERNMENT AND PUBLIC BUILDING

FDNY FIREHOUSE RESCUE #2

BROOKLYN, NEW YORK

The New York City Fire Department ("FDNY") Rescue Company 2 in Brooklyn, N.Y., needed a new facility where they could train their elite forces in how to respond to a variety of crisis conditions. The specialized fire and rescue workers would use the building to simulate a wide range of emergency conditions, which often requires creating or using voids in the structure to release heat and smoke and find means of escape.

This meant designers would have to be extremely thoughtful in how they could create an adaptable three-story structure within a safe, highly resilient envelope.

The architect conducted an early study of the tools used by emergency workers, which informed the design from the beginning and helped the architect imagine the structure as a training tool. Through that analysis, the team determined that a total-precast concrete solution was the best choice because it provided robust and durable material that would be ideal to withstand the wear and tear of the training scenarios.

"In addition, being fire-resistant was critical in the use for training of the company that is utilizing the building," says Sean Dixon, vice president of construction for High Concrete Group.

The precast concrete producer's early involvement in the planning process helped the designers achieve the right mixture proportions and alignment of hollow-core, double tees, and single tees for the flooring, which was key to ensuring the right distance of the stem of the tees throughout the building. It also helped them align where and how much terracotta could be placed as accent elements to the precast concrete.

SAFE HAVEN

The three-story building is organized around two large interior voids and enclosed by precast concrete insulated sandwich wall panels that are strategically punctured by windows and openings. The interior voids and façade openings enable the rescue teams to practice common urban emergency situations, like high angle balcony rescues, and entering a smoke-filled manhole, while boldly highlighting the building's function as a crucial piece of civic infrastructure.

"Custom precast concrete panels provided a modern look while achieving en-

KEY PROJECT ATTRIBUTES

- Precast concrete provides a fire-resistant structure to run complex rescue simulations.
- Insulated sandwich panels have an *R*-value of *R*-16, which improves the thermal efficiency of the building envelope.
- Building information modeling was used to coordinate trades on the busy jobsite to meet the tight schedule.

PROJECT AND PRECAST CONCRETE SCOPE

- Build a three-story fire rescue facility in a busy Brooklyn neighborhood.
- The project included 95 precast concrete elements.
- Precast concrete erection was completed over two months.

"Being fire-resistant was critical in the use for training of the company that is utilizing the building."

— Sean Dixon, High Concrete Group

PROJECT TEAM:

OWNER: Fire Department of New York Facilities Management, Long Island City, N.Y.
PCI-CERTIFIED PRECAST CONCRETE PRODUCER: High Concrete Group, Denver, Pa.
ARCHITECT: Studio Gang, New York, N.Y.
ENGINEER OF RECORD: Thorton Tomasetti, Chicago, Ill.
GENERAL CONTRACTOR: ZHL Group, Brooklyn, N.Y.
PCI-CERTIFIED ERECTOR: JEMCO Erectors, Inc., Shamong, N.J.
PROJECT COST: $32 million
PROJECT SIZE: 22,000 ft^2

Photos: High Concrete Group.

hanced durability," Dixon says. "And with an *R*-value of *R*-16, the insulated sandwich wall panels help improve the thermal efficiency of the building envelope and reduce the overall HVAC [heating, ventilation, and air-conditioning] system needs."

A green roof, geothermal system, and solar water-heating system also reduce energy use, lowering the building's carbon footprint.

Once on-site, the biggest challenge was driven by restrictions in shipping requirements because of the project's location in a busy Brooklyn neighborhood. "The number of bridges and limitations due to the size of panels was something that needed to be considered in the design of the panels," Dixon says. The site also lacked a staging area and required that panels be erected from the street. Careful coordination of panel delivery eased this challenge and minimized disruption on-site.

The new facility has now become a haven for rescue workers, providing a structurally safe building that can be leveraged for highly complex training sessions while also providing a comfortable and functional workplace, Dixon says. "With its adaptable spaces, environmental approach, and civic scale, the new rescue facility is both a neighborhood fixture and important piece of infrastructure, supporting a highly trained corps who safeguard those who call the city home." ●